The earthquake sedimentary record in marine sediment from cores in the western part of the Marmara Sea, Turkey
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The North Anatolian Fault (NAF) is a 1500km long dextral strike-slip fault that accommodates the extrusion of the Anatolian Plate away from the Arabia/Eurasia collision zone at a rate of 20-25mm/yr.
The submarine part of the North Anatolian Fault (NAF) in the Sea of Marmara is a very significant hazard for the 12 million people living in Istanbul (Turkey). An accurate seismic risk assessment necessitates paleoseismological data, which can be retrieved in the Marmara Sea by using sedimentary cores. Here a record of turbidites was obtained in five cores spanning the Tekirda\u{g} Basin, the Western High and the Central Basin linked by the Tekirda\u{g} Fault Segment. We characterized earthquake-related sedimentary events by combining X-ray imagery, magnetic susceptibility, granulometry and XRF measurements. Time constrain was obtain with 14C dating and ^{210}Pb data.
The turbidites are synchronous at different sites across the two basins and through the structural high pointing to shaking by earthquake as a possible triggering mechanism. In particular the M=7.4 1912 M\"{u}refte earthquake let a distinctive sedimentary imprint in all the studied cores. Radiocarbon dating implies a turbidite recurrence interval of about 300 years. The low number of seismoturbidites documented in the Central Basin compare to the Tekirda\u{g} Basin suggests quasi-synchronous ruptures of the Tekirda\u{g} Segment and the adjacent Central Segment of the NAF or a partial seismic slip on the Central Segment. Both scenarios have implications regarding seismic hazard. Finally though we obtained a paleoseismological record of the ruptures along the Tekirda\u{g} Segment, further chronological constraints are needed to better date the events and to confirm the completness of the obtained record.